

Psycho-Educational Problems in Large Academic Classes: Learning Motivation within Psycho-Educational Atmosphere

Mehrdad Shahidi¹, Abdolreza Sobhani²

¹PhD Student, Mount Saint Vincent University, CANADA, Faculty Member, IAU, IRAN, &

²Islamic Azad University, Tehran South Branch, IRAN.

¹mehrdad.shahidi@msvu.ca, ²a_sobhani@azad.ac.ir

ABSTRACT

The current study was focused on the differences between university students' satisfactory levels in four major psycho-educational domains in terms of large size classes and regular classes. The role of class size in students' academic performance was also studied by using the criterion of General Point Average (GPA). The research was conducted in three stages involving 40 students at the stage A, 147 students at stage B and 84 students at stage C. All samples were selected by using systematic multistage random sampling method. Using the scale of Student Satisfaction of Class Size-Normal/Large, and applying bivariate correlation and t-test for independent samples, the study revealed that students who participated in large classes showed significantly $t(82)=7.575$, ($P<0.000$) dissatisfaction in all four main psycho-educational domains including psycho-educational atmosphere, group interactions, concentration and learning and learning motivation. The results also revealed that academic performance in large classes is lower than regular classes. There were not significant differences between sample groups in terms of age and gender.

Keywords: Academic Class Size; Learning Motivation; Psycho-Educational Atmosphere

INTRODUCTION

A regular academic class in educational system revolves approximately around 20 to 25 students. This portion is also essential in new generation of academic classes, e-learning or online collaborate classes (Kim, 2013). Although this size of class fluctuates during an academic year, most university classes have more than 100 students particularly in each first year of admission (Slaughter, 2002; Bedard & Kuhn, 2008; Qiang & Ning, 2011). This situation is mostly originated in the propensity of university leaders to compensate their budget reduction that is usually caused by global or local economic depression (Cheng, 2011). Regardless of economic situations, many concerns about the quality of academic education are caused by large size classes. Scholarly studies revealed that large classes create psycho-educational influences negatively or positively in relation to students' learning processes, cognitive performance, learning motivation and their interpersonal communications (Hanusch, Obijiofor, & Volcic, 2009; Qiang & Ning, 2011; Bedard & Kuhn, 2008).

Using a comparative methodology, in which both large classes and normal classes across different disciplines were studied, Cheng (2011) demonstrated that students were affected negatively by large size classes resulted in their lower academic grades. In her study, Cheng (2011) demonstrated that students in Sociology, Political Science, Computer Science and

Engineering, and Mechanical and Aerospace Engineering experience significant negative class size effects on their academic satisfaction. Such negative results are not limited to university classes, post secondary schools and primary schools are also affected by large size classes (Bruhwiler & Blatchford, 2011; Denny & Oppedisano, 2013). However, students showed positive progress in some subjects such as mathematic at large classes (Denny & Oppedisano, 2013). In comparison with large size classes, it is assumed that small or regular class size provides students with better psycho-educational atmosphere (Kerr, 2011). Yet, this assumption is much more challenging while researchers pay attention to the results of some other studies such as Cheng's (2011) research. This challenging matter may be originated in the dynamics of these types of classes such as the decreased time of instruction due to management problems and the decreased time in class activity (White, 2001; Monks & Schmidt, 2010; Kerr, 2011).

Focusing on the dynamics of such negative effects of large classes, it is assumed that large size classes affect students' psycho-educational potential in a hierarchical way. In this hierarchical process, first, large classes create a specific psycho-educational atmosphere by which both students and teachers (instructors) will be affected individually and collectively. Second, the alteration of psycho-educational atmosphere within a learning community affects the process of teaching in instructors as well as the process of learning in students. The results of these processes would be the decreased learning motivation in students (Figure 1).

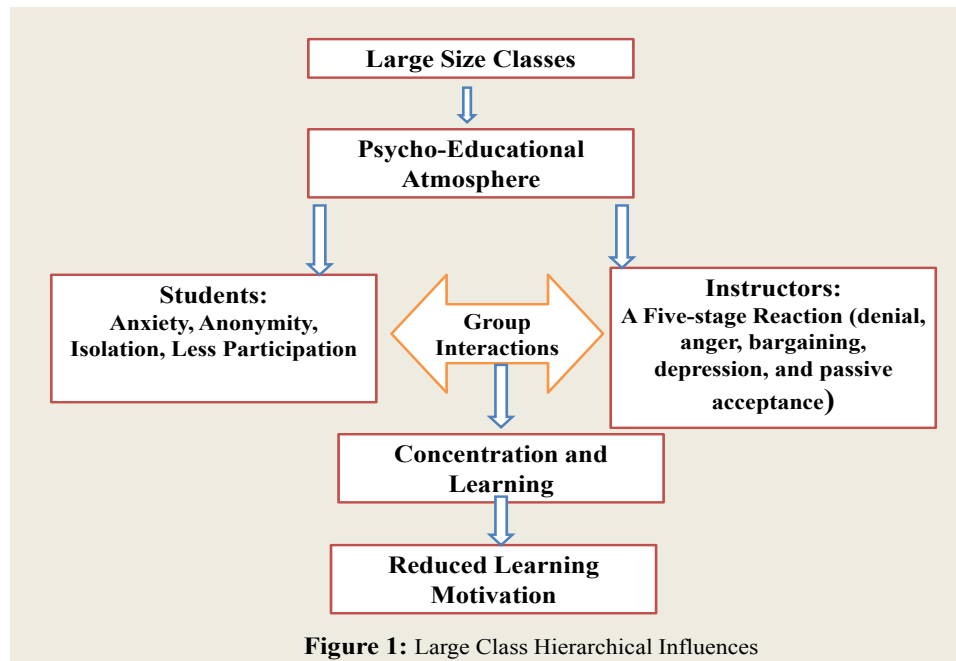
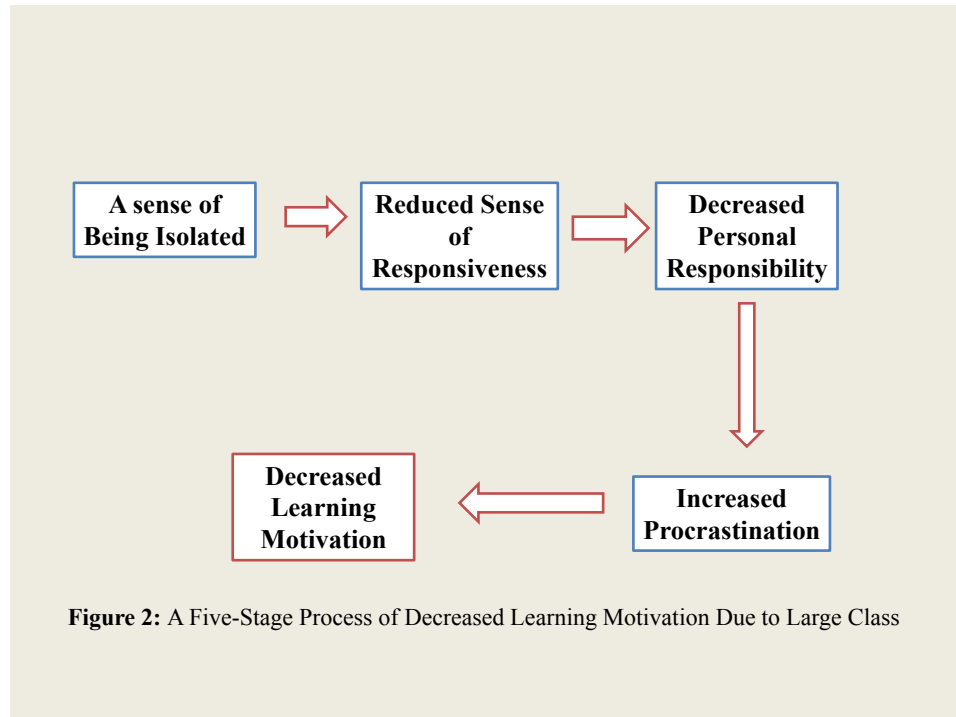


Figure 1: Large Class Hierarchical Influences

The question is what type of psycho-educational atmosphere is created by large size classes? Based on the review of related literature, the psycho-educational atmosphere is characterized by a set of symptoms that are manifested by students and instructors. For student, *anxiety*, *loneliness*, and *anonymity*, which result disengagement, missing class and being disruptive, are most common symptoms (Zakrajsek, 2007; Kerr, 2011). These symptoms produce a five-stage process started by isolation and ended by decreased learning motivation (Figurer 2).



In regard to instructors, large classes may produce a psycho-educational atmosphere similar to the stages of grief reaction within which instructors face a five-stage process including denial, anger, bargaining, depression and [passive] acceptance (Zakrajsek, 2007).

“...denial (“There is no way to increase the size of this class and maintain academic integrity!”); anger (“I can’t believe they did this, administrators don’t care about students or faculty!”); bargaining (“If I teach 20 percent more students without additional compensation, what do I get in return?”); depression (“How am I ever going to teach this class in a meaningful way again?”); and finally acceptance (“OK, my class is larger. How do I deal with the hordes?” P. 1)

Within a learning community, students and instructors are required to have interaction through which they affect each other by their psychological moods (Figure 1). Although these interactional processes were studied from different angles in many Western educational settings (Mueller, 2013; Kim, 2013; Kerr, 2011; Cheng, 2011; Slaughter, 2002; Bedard & Kuhn, 2008; Qiang & Ning, 2011), such studies have not been conducted yet in Iranian universities. Since Iran’s economic problems in past few years have led university leaders to change their educational policy to increase admissions and have large classes, the researchers decided to conduct a study on the students’ satisfactory levels of psycho-educational atmosphere, group interactions, concentration and learning, and learning motivation in terms of large and regular classes. These areas of satisfaction were elaborated in the following.

Psycho-Educational Atmosphere

As previously noted, both instructors and students can be affected by class size through different stressful ways. Instructors rely on giving lecture in busy, noisy and less controllable classes; although, teacher assistants (TA) may partially reduce the pressure of marking. In this situation, active teachers may motivate students to pay attention to their lectures, but compared with active participations in small classes the students’ engagement is less (Cuseo,

2005). To enhance the effectiveness of lectures, some instructors attempt to deliver it through creative methods. However, the efficiency of traditional lecture is still called into question (Kerr, 2011). In one study on large psychology class, Slaughter (2002) has found that most of lecturers were more likely to have trouble controlling the behaviors of students who talked continuously or even walked out during lectures. This problem directly affects the students' cognitive concentration through a long period of time (Zakrajsek, 2007). Zakrajsek (2007) noted that this situation in large classes provoked teachers to react symptomatically similar to grief reaction (Figure 1).

Being affected by this psycho-educational atmosphere, instructors may take a negative attitude toward large classes causing them not to be more active. Additionally, instructors complain the lack of time to assess the students through different ways (Slaughter, 2002; Zakrajsek, 2007; Cuseo, 2005). In this regard, Instructors have to use multiple choice exams because the exams require the minimum time to be marked. Slaughter (2002) argued that "in the Psychology Department at the University of Queensland, 20 minutes were allocated to lecturers or tutors to mark a 1000-word essay paper. In the context of 2000 first year psychology students, the marking of written work totaling 1000 words per student requires a total of approximately 667 hours!." Students also react to such classes negatively by choosing the strategy of anonymity. This feeling of being isolated in large classes reduces their sense of belongingness or the sense of community. These components of large class atmosphere may reduce their intrinsic motivation to be active in class and may cause them to have less targeted interactions with others.

Group Interactions

It was demonstrated that students are participating less in group activities in large size classes, even in online collaborate classes (Kim, 2013). Since participation is a main component of desirable achievement in higher level of students' learning (Kim, 2013), it is assumed that in such large classes, the level of students' engagement is reduced because of the alterability of psycho-educational atmosphere in large classes. Scholarly studies revealed that participation, which is measured by the degree of interaction, creates positive attitude toward learning (Patel & Aghayere, 2006 cited in Kim, 2013), improves cognitive reasoning by provoking discussion, and provides students with an opportunity for depth learning (Tomei, 2006 cited in Kim, 2013). Since less participation creates a sense of being isolated and reduces a sense of belongingness or a sense of community (Blatchford, Edmonds, & Martin, 2003), it is assumed that students feel less personal responsibility in their learning tasks. Apart from this outcome, large classes affect directly students' concentration and learning performance.

Concentration and Learning

Unlike some studies in which students do not have learning problems based on class size (Stratton, Myers, & King, 1994 cited in Bedard & Kuhn, 2008), many studies indicated that students learn passively in large classes instead of active learning in small classes (Slaughter, 2002; Hanusch et al., 2009; Qiang & Ning, 2011). It was also demonstrated that since the predominant method of teaching at such classes is lecture, and because the lecture is mostly given in a transmission model, instructors may be active but the students are passive in learning processes (Slaughter, 2002). In this regard, it is assumed that cognitive processes in learning can be affected by the psycho-educational atmosphere of large classes. Cognitive

processes in learning are divided into two different kinds: deep cognitive operation, which is composed of analysis and the evaluation of information, and superficial cognitive operation that is based on memory (Neumann & Tamir, 1986 cited in TEDI 2001; Kyndt, Cascallar, & Dochy, 2012). According to the Neumann and Tamir (1986 cited in TEDI, 2001), the quality of learning process (cognitive process) is affected by class size. This finding implicitly indicated that students tend to use superficial cognitive operation to learn in large classes instead of deep operation. Monks and Schmidt (2010) also demonstrated that large classes and difficult assignments are associated with less critical and analytical thinking, less clarity in class presentations, and lower ratings on the instructor's ability to generate students' interest and motivation.

Learning motivation

Motivation is defined as “a process of initiating, sustaining, and directing psychological or physical activities [...]” (Corsini, 1999, p. 611). Through this process individuals sustain their motivated and directed behaviors to reach predetermined goals, but this process in educational settings may be affected by a set of factors such as class size or teaching methods. In comparison with small classes, students are less motivated in large classes (Pascarella & Terenzini 1991 cited in Cuseo, 2005); although, reliable performance in small classes is not necessarily consistent and unconditional (Mueller, 2013). Additionally, students' motivation may be affected by some other factors such as teachers' feedback and their interactions with students caused by negative psycho-educational atmosphere.

Feedback is a process of receiving responses from others (Corsini, 1999), or “[a] cooperative way of exchanging information about the efficiency of communication” (Cerrato, 2002 p.101). Since any kind of communication consists of two major elements, *individuals* and *information*, feedback is seen as a mutual process rather than unilateral process that affects directly the students' motivation. It is also assumed that anonymity, alienation and the deprivation of participation increase students' dissatisfaction and reduce students' motivation at school levels (Blatchford, Edmonds, & Martin, 2003) or at higher education (Kerr, 2011). According to Slaughter (2002), some of students may feel like number in large classes which that affects their self-esteem and motivation. In all these processes a sequential pattern can be assumed. This pattern starts with psycho-educational atmosphere which is created by the components of large size classes, and ends with reduced learning motivation (Figure 1). To explore this pattern, the current research was conducted to determine whether students' satisfactory levels of psycho-educational atmosphere, group interactions, concentration and learning, and learning motivation are different in terms of class size.

METHOD

Based on the purpose of study, a three-stage method was pursued: a) determining major psychometric properties of the scales, b) surveying a large group of homogeneous students, who have taken mandatory courses and participated in both regular and large classes in one semester (Winter 2014) in order to examine their satisfactory levels of four aforementioned factors. The major condition for participation in this stage was to have the same courses and participate in the same class size. c) At the stage C, two different groups of students that participated in just one type of class size in the same semester were selected to study. At stage C, each student of one group had never participated in the alternative classes.

Participants

To test the above-noted hypothesis, the current research involved 40 students for stage A (a pilot study for psychometric properties of the scales), 160 students for stage B, and 84 participants at stage C. All sample groups were selected from Valiaser Campus, Islamic Azad University-Tehran Central and South Branch of Azad University. Of 160 participants in the stage B, 13 individuals were excluded because of their incomplete responses to the scale of Student Satisfaction of Class Size-Normal and Large (SSCS-N/L). Participants in this study were selected randomly by using a systematic multistage random sampling method. Of whole participants in the stage B, 134 (91.8%) were female and 12 (8.2%) were male. The different numbers of samples aligned with the nature of university (Valiaser Campus) population in which female students consist of approximately 80% of the total student population. The age mean of sample students was 22.3 years (SD= 1.81).

Procedure

Based on a systematic multistage random sampling method, a worksheet was designed, and then 160 students, who have taken the same courses and participated in the same large and regular classes in the current semester (Winter 2014), were selected randomly. All participants, except 13 individuals, completed the scales (SSCS-N/L and Demographic Questionnaire) in group sessions in their usual regular and large classes. The administration of the instruments was counterbalanced. Participants took approximately 10 to 20 minutes to fill in the scales. Before completing the scales, all participants were informed about the purpose of study and how to answer the questions based on ethical process. The sampling method was applied for all three stages of current research.

Instrument

Two scales including a *Demographic Student Population Questionnaire* and the *Scale of Student Satisfaction of Class Size-Normal and Large* (SSCS-N/L) were used in this study. Demographic Student Population Questionnaire, which consists of 10 questions, was related to general population characteristics of sample students. The SSCS-N/L is a 22-item self-administered survey to quantify the students' satisfactory levels of psycho-educational atmosphere, group interactions, concentration and learning, and learning motivation in both large and regular classes.

The items of SSCS-N/L are scored in Likert format from 0 = never through 4= a great deal. Of 22 items, 4 items (Questions # 8, 9, 13, 19) are scored reversely. SSCS-N/L was designed in two parallel forms, one for regular (normal) classes and one for large classes. At the stage A, The designed scale was assigned to four blinded psychometric experts to determine the extent to which this scale is measuring all four above-noted factors. After scrutinizing the content of the SSCS-N/L and reaching a high agreement, a sample group of 40 students for a pilot study of reliability was used. The result revealed that the Cronbach's Alpha for the scale (0.78) is satisfactory to continue stage B. In addition to this pilot study, the collected data from the sample of 147 students at stage B was also used to analyze the psychometric properties of SSCS-N/L. The result of this analysis showed an increased satisfactory reliability coefficient from 0.78 (in pilot study) to 0.89 in stage B by modifying the scale. The reliability of each subscale in SSCS-N/L is shown in Table 1.

Table 1: Reliability Coefficient for Subscales of SSCS-N/L

	<i>Cronbach's Alpha Based on Standardized Items</i>	<i>N of Items</i>
SSCS-N/L	.892	22
Group Interaction	.835	7
Learning Motivation	.822	8
Concentration and Learning	.611	3
Psycho-Educational Atmosphere	.568	4

The correlations among the subscales of SSCS-N/L for regular class are presented in Table 2.

Table 2: Correlations among Subscales of SSCS-N/L and Total Score of SSCS-N/L

	<i>Group Interactions</i>	<i>Learning Motivation</i>	<i>Concentration and Learning</i>	<i>Psycho- Educational Atmosphere</i>
Total Score of SSCS-N/L	.818**	.825**	.625**	.688**
Group Interaction		.540**	.457**	.362**
Learning Motivation			.384**	.410**
Vigilance and Learning				.294**

**p < .01

As Table 2 shows, the associations between factors are low enough to be separated from each other and not to be overlapped and are high enough to maintain the internal reliability. With a little discrepancy, the same result was found for the second form of the scale. The above noted psychometric properties of SSCS-N/L at stage A led the researchers to examine whether those individuals have taken the same courses and participated in the same large and regular classes have different satisfactory levels of psycho-educational atmosphere, group interactions, concentration and learning, and learning motivation in terms of their current experiences.

RESULTS

The analysis of data revealed that the mean of SSCS-N/L (M= 30.97, SD=13.88) for the general satisfaction of large classes is lower than students' satisfactory level of regular classes' (M=62.57, SD=11.759). The same result was found for all four main variables (see Table 4).

Since sample students were identical in both (large and regular) classes at the stage B, bivariate correlation was used to test the main hypothesis regarding the students' satisfactory levels of four above-noted variables.

Table 4: The Comparative Means and Standard Deviation for SSCS-N/L in Regular and Large Classes

	Mean	Std. Deviation
Regular Classes		
Total Score of SSCS-N/L	62.57	11.759
Group Interaction	19.48	4.625
Learning Motivation	22.26	4.776
Vigilance and Learning	8.31	2.280
Psycho-Educational Atmosphere	12.52	3.791
Large Classes		
Total Score of SSCS-N/L	30.97	13.888
Group Interaction	8.48	4.994
Learning Motivation	13.46	6.032
Vigilance and Learning	4.16	2.383
Psycho-Educational Atmosphere	4.88	3.294

The results revealed that the students' satisfactory level of psycho-educational atmosphere in regular classes has negative correlation with their satisfaction of the same factor in large classes ($r = -0.21, P < 0.05$), as well as with the satisfaction of group interactions ($r = -0.314, P < 0.01$), the satisfaction of learning motivation ($r = -0.22, P < 0.01$), and the satisfaction of concentration and learning ($r = -0.235, P < 0.01$). As Table 5 shows, there is a discrepancy between students' entire satisfaction of regular classes and their satisfaction of large classes in the case of psycho-educational atmosphere, group interactions, concentration and learning, and learning motivation.

Table 5: The Association between Students' Satisfaction of Regular Classes and Their Satisfaction of Large Classes Regarding Four Major Factors

	<i>Total Score of SSCS-N/L in LC</i>	<i>Group Interactions in LC</i>	<i>Learning Motivation in LC</i>	<i>Concentration & Learning in LC</i>	<i>Psycho-Educational Atmosphere in LC</i>
Total Score of SSCS-N/L in Regular Classes	-0.211*	-0.175*	-0.103	-0.153	-0.326**
Group Interaction in Regular Classes	-0.246**	-0.128	-0.199*	-0.229**	-0.314**
Learning Motivation in Regular Classes	-0.075	-0.139	0.081	-0.051	-0.219**
Concentration and Learning in Regular Classes	-0.162	-0.126	-0.084	-0.144	-0.235**
Psycho-Educational Atmosphere in Regular Classes	-0.163*	-0.136	-0.130	-0.043	-0.211*

*P < 0.05, **P < 0.01, LC=Large Classes

To scrutinize this discrepancy, the stage C was planned. No participants from stages A and B took part in the study at stage C. Thus, two different groups of students, who participated in just one type of class size, either in regular classes (group 1) or in large classes (group 2) were selected randomly. Students in each group had never participated in alternative classes before.

The total number of participants at the stage C was 84. Of this number, 39 students (group one) were participated in regular classes in their social science programs. Of group one, 36 (92.3%) were female and 3 (7.7%) were male with age mean $M = 22.28$ ($SD = 1.7$). Second group (Large classes) consisted of 45 students with age mean $M = 22.64$ ($SD = 2.15$). Of this group, 43 (95.6%) were female and 2 (4.4%) were male. All participants in the stages B and C of current research were undergraduate students studying in different social science programs.

After completing the scales, the data were analyzed by using independent sample *t-test* method to determine whether the groups show a discrepancy in the satisfactory levels of related factors. Using Levene's Test for Equality of Variances (Beshlideh, 2012) $f=0.169$ ($P = 0.682$) revealed that equal variances in the scores of SSCS-N/L for both groups can be assumed; therefore, *t-test* was appropriate method to analyze the hypothesis. The result of *t-test* for independent groups (group1 and group 2) was shown in Table 6-1 and Table 6-2. As the these Tables show, the group 1($M= 58.31$, $SD= 16.74$), which participated in just regular classes, showed significantly higher satisfaction $t(82) = 7.575$, $P < 0.000$ of class size than group 2 ($M = 32.64$, $SD = 14.921$) that participated in large classes.

Table 6.1: The Descriptive Analysis of Both Groups

	Groups	N	Mean	Std. Deviation	Std. Error Mean
Total SSCS-N/L	Regular Class	39	58.31	16.074	2.574
	Large Class	45	32.64	14.921	2.224
Group Interactions	Regular Class	39	17.87	6.062	.971
	Large Class	45	8.00	5.157	.769
Learning Motivation	Regular Class	39	21.33	6.183	.990
	Large Class	45	14.71	6.774	1.010
Concentration and Learning	Regular Class	39	7.82	2.809	.450
	Large Class	45	4.93	2.472	.368
Psycho-Educational Atmosphere	Regular Class	39	11.28	3.886	.622
	Large Class	45	5.00	3.490	.520

Table 6.2: The differences between students' satisfaction in terms of class size

	<i>t</i>	<i>df</i>	<i>Sig. (2-tailed)</i>	<i>Mean Difference</i>	<i>Std. Error Difference</i>	<i>95% Confidence Interval of the Difference</i>	
						<i>Lower</i>	<i>Upper</i>
Total SSCS-N/L	7.585	82	.000	25.663	3.384	18.932	32.394
	7.544	78.257	.000	25.663	3.402	18.891	32.435
Group Interactions	8.066	82	.000	9.872	1.224	7.437	12.307
	7.973	75.099	.000	9.872	1.238	7.405	12.338
Learning Motivation	4.652	82	.000	6.622	1.424	3.790	9.454
	4.683	81.766	.000	6.622	1.414	3.809	9.436
Concentration and Learning	5.012	82	.000	2.887	.576	1.741	4.033
	4.966	76.404	.000	2.887	.581	1.729	4.045
Psycho-Educational Atmosphere	7.805	82	.000	6.282	.805	4.681	7.883
	7.745	77.141	.000	6.282	.811	4.667	7.897

The results of this analysis also revealed that there were no significant differences between the groups' satisfactions in terms of gender and age. Regarding academic grade, General Point Average (GPA) for the same semester and similar courses was used to determine whether students' academic performances were affected by class size. The result revealed that the GPA, $M = 16.82$ ($SD = 1.575$), in group 1 (regular classes) was significantly $t(82) = 5.10$, $P < 0.000$ different from GPA, $M = 15.36$ ($SD = 1.030$) in group 2 (large classes). Generally, the current study revealed that group 1, who participated in regular classes, showed significantly higher satisfactory levels in all four domains, that is, the students participated in large classes showed dissatisfaction in above noted four domains.

DISCUSSION

The matter of class size and current tendency to have large classes at most universities are originated in two main factors: Firstly, the business and economic situations have led university leaders to intake many students to run their learning communities. Secondly, some educational researchers claim that the psycho-educational problems of large classes are important, but they are not as much threatening as what have been reported previously (Hanusch, Obijiofor, & Volcic, 2009; Qiang & Ning, 2011; Bedard & Kuhn, 2008)

In contrast to these arguments, the current research revealed that students who participated in large classes showed considerable dissatisfactions of large classes in four major domains including psycho-educational atmosphere, group interactions, concentration and learning, and learning motivation. This result was homogeneous for students who have both experiences of being in regular and large classes and students who participated in just one type of class size. As the results of current study show, the major area that was affected by large classes is

psycho educational atmosphere (See Table 5) by which other areas are assumed to be easily affected. These results aligned with most studies in which the psycho-educational problems of large classes were demonstrated (Slaughter, 2002; Zakrajsek, 2007; Cuseo, 2005; Mueller, 2013; Kim, 2013; Kerr, 2011; Cheng, 2011; Bedard & Kuhn, 2008; Qiang & Ning, 2011; Denny & Oppedisano, 2013). In conclusion, the differences between two groups of students that participated in the stage C of current study (see Table 6-1 and 6-2) revealed that large classes per se have potential to negatively affect four main aforementioned psycho-educational domains. Although the pathways of effectiveness for all above factors were not studied in current research, it is supposed that learning motivation is affected indirectly by collective potential of other influences such as negative psycho-educational atmosphere, decreased group interactions and disturbed concentration and poor learning. Revealing the differences between GPAs in both groups, it is demonstrated that lower GPAs for students who belonged to group 2 (large classes) are caused by reduced learning motivation. However, this result for academic performance should be interpreted cautiously since the confound variables such as teaching methods, IQ, and instructors' professional characteristics were not controlled or studied in this research.

Since some of universities in Iran lack enough alternative facilities and innovative ways to reduce large class problems, it is suggested that those universities use the following ways: 1) grouping students into learning teams to facilitate interaction, discussion and peer support, 2) running workshops, 3) using collaborate technology, 4) planning academic campaigns and field trips, and 5) providing students with peer-assistance group, TA groups, seminar groups or tutorial groups.

REFERENCES

- [1]. Bedard, K., & Kuhn, P. (2008). Where class size really matters: Class size and student ratings of instructor effectiveness. *Economics of Education Review*, 27, 253–265.
- [2]. Blatchford, P., et al. (2003). Class size, pupil attentiveness and peer relations. *British Journal of Educational Psychology*, 73, 15–36.
- [3]. Bruñwiler, C., & Blatchford, P. (2011). Effects of class size and adaptive teaching competency on classroom processes and academic outcome. *Learning and Instruction*, 21, 95-108 doi:10.1016/j.learninstruc.2009.11.004.
- [4]. Cheng, D. A. (2011). Effects of class size on alternative educational outcomes across disciplines. *Economics of Education Review* 30, 980–990;doi:10.1016/j.econedurev.2011.04.009.
- [5]. Corsini, R. (1999). *The dictionary of psychology*. Brunner-Mazel, USA.
- [6]. Cuseo, J. (2005). the empirical case against large class size: adverse effects on the teaching, learning, and retention of first year students. <https://wiki.doit.wisc.edu/confluence/download/attachments/20938768/Cuseo.pdf>
- [7]. Denny, V., & Oppedisano, V. (2013). The surprising effect of larger class sizes: Evidence using two identification strategies. *Labour Economics* 23, 57–65.http://dx.doi.org/10.1016/j.labeco.2013.04.004

- [8]. Hanusch, F., et al. (2009). Theoretical and practical issues in team-teaching a large undergraduate class. *International Journal of Teaching and Learning in Higher Education*, 21, (1) 66-74.
- [9]. Kerr, A. (2011). Teaching and Learning in Large Classes at Ontario Universities: An Exploratory Study. *Higher Education Quality Council of Ontario*.
- [10]. Kim, J. (2013). Influence of group size on students' participation in online discussion forums. *Computers & Education* 62,123–129 [http://dx.doi.org/10.1016/j.comp.edu, \(10\)25](http://dx.doi.org/10.1016/j.comp.edu.2012.12.001).
- [11]. Kyndt, E., et al. (2012). Individual differences in working memory capacity and attention, and their relationship with students' approaches to learning. *High Educ.* 64:285–297. DOI 10.1007/s10734-011-9493-0.
- [12]. Monks, J., & Schmidt, R. (2010). The impact of class size and number of students on outcomes in higher education. http://www.ilr.cornell.edu/cheri/upload/cheri_wp136.pdf
- [13]. Mueller, S.(2013). Teacher experience and the class size effect — Experimental evidence. *Journal of Public Economics*, 98, 44–52. <http://dx.doi.org/10.1016/j.jpubeco.2012.12.001>.
- [14]. Qiang, W., & Ning, Z. (2011). Teaching Large Classes in China-English as a Foreign Language. [http://www2.warwick.ac.uk/fac/soc/al/research/projects telc/5_wang_qiang_overview_of_china_research_0.pdf](http://www2.warwick.ac.uk/fac/soc/al/research/projects/telc/5_wang_qiang_overview_of_china_research_0.pdf)
- [15]. Slaughter, V. (2002). Teaching Psychology in Large Classes: An international survey of solutions. *Teaching and Educational Development Institute, University of Queensland*. http://www.cadad.edu.au/largeclasses/pdfs/Resources_3TeachPsych.pdf [http://78.158.56.101/archive/psychology/s.php@p=168&db=766.html](http://78.158.56.101/archive/psychology/s.php?p=168&db=766.html)
- [16]. Teaching and Educational Development Institute-TEDI. (2001). Student performance in large classes. *The University of Queensland Australia*. http://www.cadad.edu.au/largeclasses/pdfs/LitReview_2_StudPerf.pdf
- [17]. White, P. (2001). Large classes heavy on content: A case from pharmacy. *Teaching and Educational Development Institute, the University of Queensland*.
- [18]. http://www.cadad.edu.au/largeclasses/pdfs/CaseStudy-12_White.pdf
- [19]. Zakrajsek, T. (2007). Effective Teaching When Class Size Grows. *Observer, Association for Psychological Science*,20(5). <http://www.psychologicalscience.org/index.php/publications/observer/2007/may-07/effective-teaching-when-class-size-grows.html>
- [20]. <http://www.psychologicalscience.org/?s=Effective+Teaching+When+Class+Size+Grows>